



Medicinal Bioprospecting and Ethnobotany Research

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Editorial

Much has been made of the value of traditional knowledge and its role in bioprospecting (Reid *et al.* 1993), biodiversity research (Laird 2002), and conservation of languages (Nettle & Romaine 2000). As researchers, we often are involved in discussions wherein the emphasis seems to be on who "owns" the knowledge or has the "right" to use it.

The economic value of traditional knowledge is often identified as a reason for conserving and documenting cultural practices. Medicinal plant knowledge is of special value. Conservation of ecosystems such as forests is linked to their potential as sources of medicines. Many research and conservation grants have been awarded on the basis of the perceived economic value of medicinal plants. Research on traditional knowledge of medicinal plants is considered to be a primary means to advance the search for drugs to cure modern plagues.

At the same time, "biopirates" (people who creep around looking for biological resources that they can steal) are reported to be hiding behind every tree. Communities with traditional knowledge are warned to beware: Something evil this way comes! It is probably a bioprospector disguised as an innocent ethnobotanist looking to hijack some information and local plants.

Several well known watchdog groups have preached the notion that bioprospectors, including ethnobotanists, are to be feared, avoided, or dealt with harshly. Some governments have implemented strong legislation to prevent loss of both biological diversity and knowledge of biodiversity. However, I want to challenge these notions in three ways. First, there is little reason to believe that bioprospecting will lead to pharmaceuticals based upon recent history. Second, bioprospecting is not unique to scientists and is a common human trait. Third, sharing of knowledge is fundamentally an adaptive trait of humans. The ethnobotany community is being foolish about these issues.

Traditional Medicinal Plants are not sources of New Pharmaceuticals.

There are no new drugs developed from ethnobotanical leads. I can not find ONE traditional medicinal plant use that has been newly reported in the literature in the last 30 years (the period of most intensive research) that has subsequently been converted into a pharmaceutical for the same or a similar indication in countries such as the United States. There are long lists in the text books of plants that have formed the basis of modern global pharmacopoeia, but where are the modern inductees into these lists?

The pharmaceuticals that are held up as examples of the potential of ethnobotany fall short for the following reasons:

- They are from plants that have been known and used by many cultures for a long time.
- They are from plants that have never been used by any culture for anything close to the modern indication.

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- They are the result of non-ethnobotanical searches of biodiversity with the recognition of traditional use being an afterthought.
- The biologically active molecule was developed as a synthetic drug and then later found to be present in one or more plants.

Additionally, there are always exciting leads that are being developed, but have not yet been commercialized. These are hopes and dreams, not drugs that benefit people. These are nice to discuss but do not justify research, legislation, conservation efforts, fears, *et cetera*.

An issue that does not seem to be discussed is the nature of the usefulness of traditional knowledge that is identified through ethnobotanical research. Plants that are used to treat illnesses that are current plagues on global society seem to carry great weight because they have high perceived value OUTSIDE of a community. However, the major global diseases are not always within the range of experience of local communities. Alternatively, plants that are used as protections from evil spirits or as markers of locally important resource areas are not considered to be of great concern in intellectual property rights issues because they have very low perceived value OUTSIDE of a community. In reality, the opposite is often the case within a community. Local communities are constantly receiving new species (some with knowledge of their use), experimenting with them, and incorporating use of those found to have local value. With this in mind, limitations on the distributions of plants and knowledge are likely to limit local adaptation through incorporation of new plants and knowledge from other parts of the world. For the average person, this is probably much more significant in their lives than the potential loss of plants to pharmaceutical companies elsewhere in the world.

Sharing Knowledge

More important than having a solid pharmaceutical example is a realistic consideration of the nature of knowledge to real people. Dan Moerman shared the following thought: "If I 'own' \$10, and give it to you, I don't have the money any more. If I 'own' the knowledge of a plant or animal, or a magic trick, and I give it to you, that is, I tell you about the plant or animal or show you how to do the trick then I have not lost a thing, I still 'own' it." In other words, when people share knowledge they have not LOST anything. It would therefore be worth our time to distinguish between traditional knowledge that can be shared without loss and items that when given are no longer owned and truly lost. Somewhere in the legal definitions and squabbles of lawyers this notion has been suppressed or buried.

I have yet to work in a community where the traditional knowledge of medicinal remedies has been taken away because of outside use of the plant. However, I understand that in some parts of the world the economics of selling locally important medicinal plants to outsiders has

disrupted traditional use patterns. What is not clear is if any of these plants are new "discoveries" that have not been in trade for hundreds of years.

Bioprospecting

Bioprospecting as the search for value in the biological world is an incredibly ancient practice. In a general way, any time that a person searches for food or other biological value in their environment, they are bioprospecting. When ethnobotanists study traditional human interactions with plants, we are in fact studying the results of bioprospecting, the bioprospectees (plants) and the bioprospectors (knowledge holders).

Although we will never know, it seems likely that the earliest humans to discover a new use for a plant proceeded to share that knowledge with others. This is a human thing to do. Frankly, it is a key basis for survival of cultures and the foundation of all science. Now we seem to be getting uptight about the practice of sharing knowledge, particularly if it has perceived commercial value. The greater this value, the greater the concern.

We all are bioprospectors. It is high time that the discussion accepted this and moved on to higher issues of science and culture. The real bad guys are easy to spot and they are rarely academic biologists or social scientists asking theoretical or applied questions about human interactions with plants and plant environments.

Is it possible for us to become more realistic about the value of traditional knowledge, and the reality of bioprospecting? Until there is a pattern of drug discovery from ethnobotanical research (or even one modern example) we should discontinue using false arguments (lies) about the economic value of traditional knowledge to the globalized world.

Literature Cited

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